

CLAIMS

1. A storage apparatus for storing samples on containers inside a chamber adjusted to predetermined ambient conditions, the storage apparatus being
5 characterized in that a container transport device is disposed inside the chamber centrally thereof and comprises a transport table for placing the container thereon, and a drive mechanism for driving the transport table in the direction of X-axis and the direction of Y-axis which are
10 orthogonal on a horizontal plane, and in the direction of Z-axis orthogonal to these directions, a container accommodating rack being disposed on each of opposite sides of the transport device which sides are along the direction of X-axis, the accommodating rack having container
15 accommodating portions arranged in the direction of Y-axis and in the direction of Z-axis for accommodating therein respective containers, the container being movable into or out of the desired container accommodating portion of the desired rack by the transport device.
- 20 2. A storage apparatus according to claim 1 wherein the chamber is provided with a gas outlet facing toward a central space surrounded by the accommodating racks on the opposite sides for discharging therefrom a gas for adjusting the inside of the chamber to the predetermined

ambient conditions.

3. A storage apparatus according to claim 1 wherein the container accommodating rack comprises a plurality of stackers arranged in the direction of Y-axis, and each of
5 the stackers comprises container accommodating portions repeatedly provided in the direction of Z-axis.

4. A storage apparatus according to claim 3 wherein the chamber has an opening facing toward the direction of Y-axis and a door for closing the opening, and the
10 plurality of stackers constituting the accommodating rack are mounted on a drawer installed on a base and slidable in the direction of Y-axis, the plurality of stackers being withdrawable through the opening along with the drawer, with the door opened.

15 5. A storage apparatus according to claim 1 wherein the chamber has a container inlet for transporting the container into the chamber therethrough, and the container inlet has a container carriage mechanism connected thereto.

6. A storage apparatus according to claim 5 wherein
20 the chamber has attached thereto a shutter mechanism for opening and closing the container inlet.

7. A storage apparatus according to claim 5 wherein the chamber is provided with an air curtain mechanism for producing an air stream curtain for the container inlet.

8. A storage apparatus according to claim 1 wherein
the drive mechanism of the container transport device
comprises an X-axis transport assembly for driving the
transport table in the direction of X-axis, a Y-axis
5 transport assembly for driving the transport table in the
direction of Y-axis and a Z-axis transport assembly for
driving the transport table in the direction of Z-axis, and
the Y-axis transport assembly comprises a reciprocating
movable body for reciprocatingly moving the transport table
10 along the direction of Y-axis, the reciprocating movable
body having a lower end portion and an upper end portion
engaged respectively with a lower guide rail and an upper
guide rail which extend in the direction of Y-axis.

9. A storage apparatus according to claim 1 wherein
15 the drive mechanism of the container transport device uses
a belt drive mechanism of stainless steel for the
transmission of power.

10. A storage apparatus according to claim 1 wherein
the container transport device has its operation controlled
20 by a drive control device and moves the transport table in
the direction of Y-axis and direction of Z-axis at
predetermined timing to thereby promote the circulation of
air inside the chamber.

11. A storage apparatus for storing samples on

containers inside a chamber having ambient conditions adjusted by an environment adjusting device, the storage apparatus being characterized in that the chamber has arranged therein a container accommodating rack having a 5 plurality of container accommodating portions and a container transport device for transporting the container inside the chamber, a motor serving as a power source for the container transport device and being disposed inside the chamber together with a main body portion of the 10 container transport device.

12. A storage apparatus according to claim 11 wherein the motor serving as the power source for the container transport device is accommodated in a motor case having a closed interior space, and the motor case has connected 15 thereto an air admitting hose for introducing air into the motor case and a vent hose for discharging air from inside the motor case to circulate air through the interior space of the motor case.

13. A storage apparatus according to claim 11 wherein 20 the motor serving as the power source for the container transport device is connected to a drive control device and is supplied with drive current and a revolution number control signal, and the drive control device feeds a revolution number zero control signal and drive current to

the motor of the transport device at a suitable time while a container transport operation is discontinued so as to maintain the motor at a temperature not permitting condensation of water vapor by energizing the motor.

5 14. A storage apparatus according to claim 13 wherein the drive control device feeds the revolution number zero control signal and the drive current to the motor for a specified period of time after the environment adjusting device is brought out of operation.

10 15. A storage apparatus for storing samples on containers inside a chamber adjusted to predetermined ambient conditions, the storage apparatus being characterized in that one or a plurality of stackers can be arranged inside the chamber for accommodating containers therein, each of the stackers being provided with identification information for identifying the stacker, the storage apparatus comprising:

15 an apparatus body,
 storage means for storing the identification information
 therein,

20 means for reading the identification information provided
 on the stacker,
 information processing means for storing the read
 identification information in the storage means, and

control means for controlling the operation of the apparatus body with reference to the identification information stored in the storage means.

16. A storage apparatus according to claim 15 wherein
5 the stacker has arranged therein a plurality of container accommodating portions each for placing the container thereinto, and the apparatus body comprises a container transport device installed inside the chamber, the container being movable into or out of the desired
10 accommodating portion in the desired stacker by the container transport device, the operation of the container transport device being controllable by the control means based on the identification information.

17. A storage apparatus according to claim 15 wherein
15 the apparatus body has an information display device, and the information processing means stores maintenance management information for managing stacker maintenance time in the storage means along with the stacker identification information, the control means being
20 operable to monitor the maintenance time for the plurality of stackers arranged inside the chamber based on the stacker identification information and the maintenance management information and to give the information display device a command to display arrival of the maintenance time

upon the arrival of the time to maintain the stacker.

18. A storage apparatus for storing samples on containers inside a chamber adjusted to predetermined ambient conditions, the storage apparatus being
5 characterized in that one or a plurality of container accommodating racks are arranged inside the chamber, each of the containers being provided with identification information for identifying the container, the storage apparatus comprising:

10 an apparatus body,
 storage means for storing the identification information therein,
 means for reading the identification information provided on the container,

15 information processing means for storing the read identification information in the storage means, and control means for controlling the operation of the apparatus body with reference to the identification information stored in the storage means.

20 19. A storage apparatus according to claim 18 wherein the container accommodating rack has arranged therein a plurality of container accommodating portions each for placing the container thereinto, and the apparatus body comprises a container transport device installed inside the

chamber, the container being movable into or out of the desired accommodating portion in the desired accommodating rack by the container transport device, the operation of the container transport device being controllable by the 5 control means based on the identification information.

20. A storage apparatus according to claim 19 wherein the chamber has a container inlet for placing the container into the chamber therethrough, and the container inlet has a container carriage mechanism connected thereto, the 10 identification information reading means being provided as opposed to the container inlet.

21. A storage apparatus according to claim 18 wherein the apparatus body has an information display device, and the information processing means stores delivery management 15 information for managing the time to deliver the container in the storage means along with the container identification information, the control means being operable to monitor the delivery time for the plurality of containers arranged inside the chamber based on the 20 container identification information and the delivery management information and to give the information display device a command to display arrival of the delivery time upon the arrival of the time to deliver the container.